

**AN ARCHAEOLOGICAL SURVEY FOR THE
RIO WATER SUPPLY CORPORATION
WATER TREATMENT PLANT PROJECT
IN STARR COUNTY, TEXAS**

Antiquities Permit 5270



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***Brazos Valley Research Associates
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RIO WATER SUPPLY CORPORATION WATER TREATMENT PLANT
PROJECT IN STARR COUNTY, TEXAS

BVRA Project Number 09-10

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ABSTRACT

An archaeological survey of a 22.9 acre tract and 6300 feet of water line in southern Starr County, Texas was conducted by Brazos Valley Research Associates (BVRA) in April of 2009 for the Rio Water Supply Corporation (WSC) under Antiquities Permit 5270. In all, 23.14 acres were examined. No previously recorded archaeological sites are present within any portion of the project area, and no previously unrecorded archaeological sites were found. Much of the project area had been disturbed through road construction and agricultural practices. No artifacts were collected. The western portion of the 22.9 acre tract is bounded by the east bank of the Rio Grande River.

ACKNOWLEDGMENTS

The authors are grateful to those individuals who participated in this project. At the Rio WSC office we were assisted by Gloria Salinas (General Manager), Marissa Trevino (Clerk), Juan Jose Zarate who operated the backhoe, and his assistants Jaime Martinez and Cesar Piceno. Project area maps were provided by George E. Lazaro of J. F. Fontaine & Associates, Inc. The reviewer for this project was Debra L. Beene, staff archaeologist at the Texas Historical Commission (THC). Jean Hughes, Records Conservator at the Texas Archeological Research Laboratory (TARL), assisted the Principal Investigator with the records check. Edward P. Baxter and Lili G. Lyddon prepared the figures in this report. Ms. Lyddon edited the manuscript.

CONTENTS

ABSTRACT	ii
ACKNOWLEDGMENTS	iii
INTRODUCTION	1
ARCHAEOLOGICAL BACKGROUND	6
METHODS OF INVESTIGATION	9
RESULTS AND CONCLUSIONS.....	18
RECOMMENDATIONS.....	19
REFERENCES CITED.....	20

Appendices

Appendix I: Shovel Test Log

Figures

Figure 1. General Location	2
Figure 2. Project Area on Topographic Maps	3
Figure 3. Profile of River Bank (facing south)	10
Figure 4. Site of Proposed Water Intake Structure (facing west)	11
Figure 5. Site of Proposed Water Treatment Plant (facing west)	12
Figure 6. Location of Shovel Tests and Backhoe Trenches in Area A	13
Figure 7. Location of Shovel Tests in Area B	16
Figure 8. Right-of-Way along Midway Road	17

INTRODUCTION

The Rio WSC is a small water supply corporation located in Rio Grande City along United States Highway 83 in southern Starr County, Texas. The proposed project will improve the distribution of water to customers of the Rio WSC by the construction of a water treatment plant, river intake structure, 1000 feet of raw water supply line, and 5300 feet of water distribution line. Funds for this project will be provided by the United States Department of Agriculture, Rural Utilities Services.

The river intake structure and water treatment plant will be constructed within a 22.9 acre tract (Area A) of land owned by the Rio WSC. Approximately 1000 feet of raw water supply line (16-inch) within this tract will connect the two structures. An additional 5300 feet of water distribution line (Area B) will be placed in the right-of-way of Midway Road and connect the water treatment plant with the existing water distribution system at United States Highway 83. The river intake structure will occupy a footprint of 10 feet x 10 feet and will pump water from the river from a depth of 40 feet below the existing ground surface. The water treatment plant will occupy a footprint of approximately 30 feet x 50 feet and will receive the water from the river. The water will be treated, and then it will be transported through a 16-inch pipe to the existing water distribution system mentioned above. The water line within the 22.9 acre tract and along Midway Road will be placed in a trench two feet wide and three feet deep. The general location of the project area is depicted in Figure 1. Topographic coverage of the project area is provided by the 7.5' USGS topographic quadrangles Los Garzas (2698-232) and Roma-Los Saenz East (2698-233) (Figure 2).

The project area is in a region where significant prehistoric and historic sites have been recorded. In fact, there is a National Register District (Fort Ringgold) four miles to the east. This is the closest historic district to the project area. Since the project area is adjacent to the Rio Grande River and in an area where significant historic sites are known to occur, a cultural resource survey was requested in a letter from the THC to George E. Lazaro of J. F. Fontaine & Associates, Inc. In order to satisfy this requirement, the Rio WSC retained the services of BVRA to perform an archaeological survey of the project area.

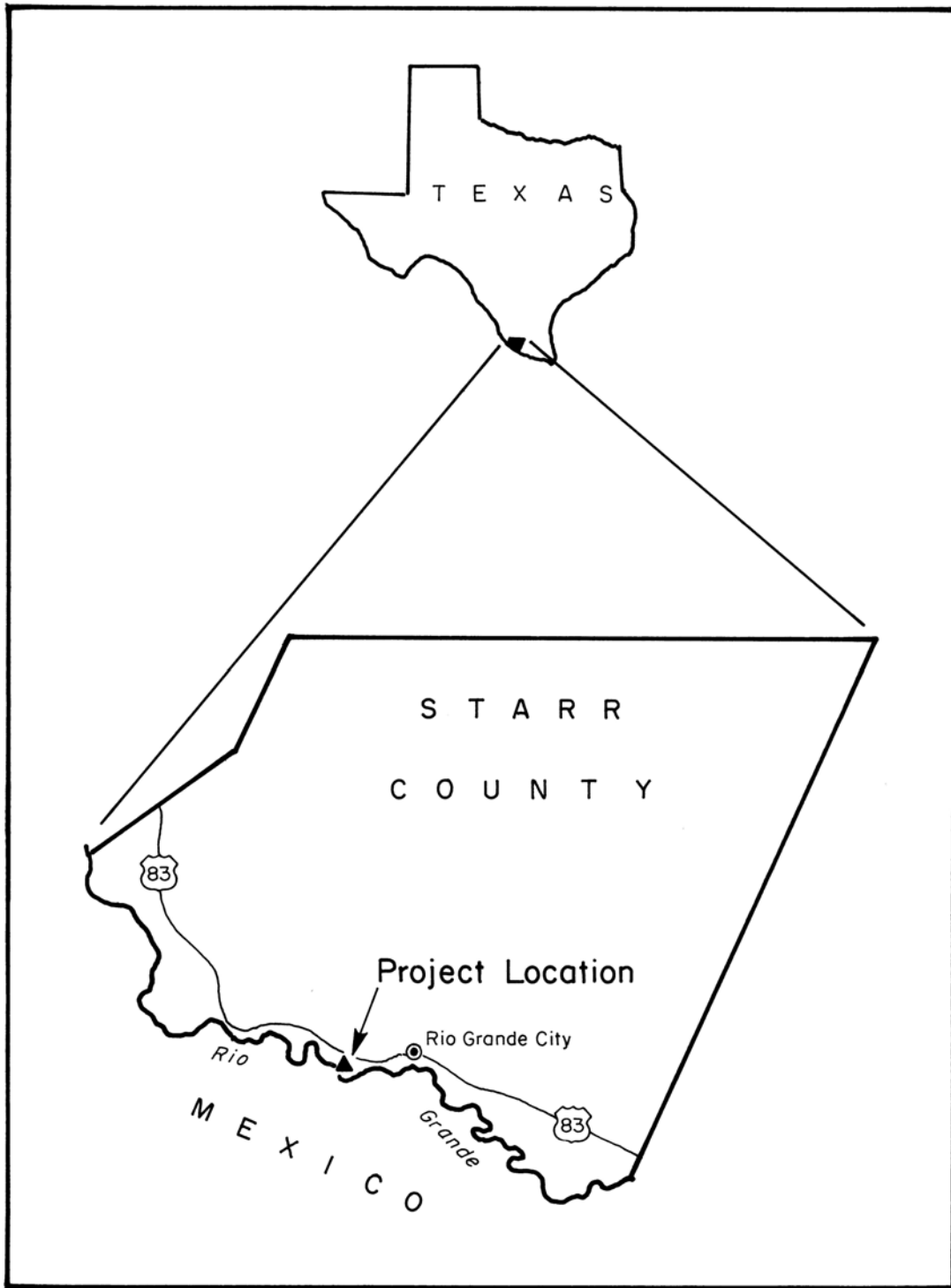


Figure 1. General Location

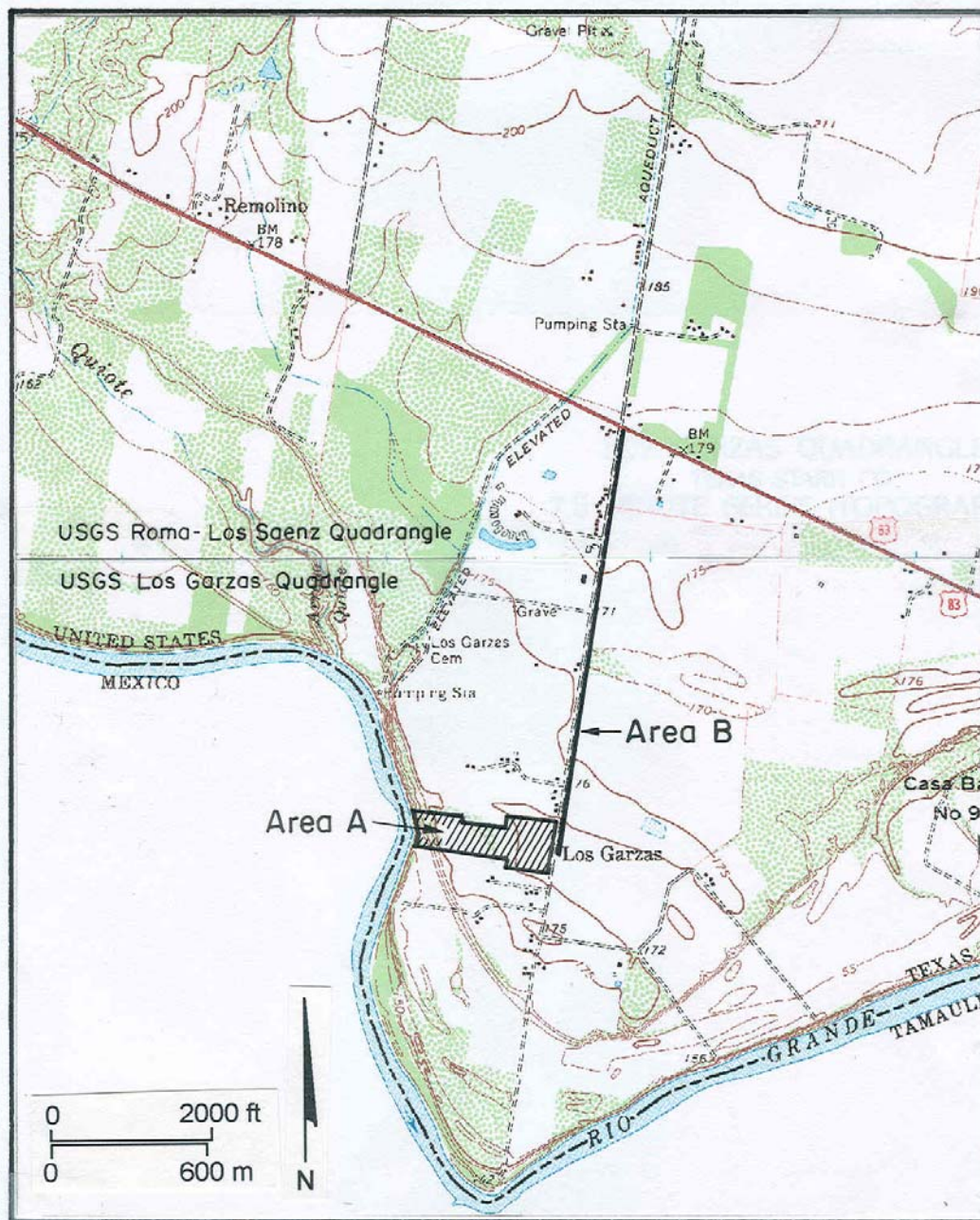


Figure 2. Project Area on Topographic Maps

ENVIRONMENTAL SETTING

The following information for Starr County was taken from the published soil survey (Thompson et al. 1972), a study of mammals of Texas (Davis 1974), a planning document published by the THC (Mercado-Allinger et al. 1996:25), and The Handbook of Texas Online (2001). Starr County is located in the South Texas Brush Country and is part of the Rio Grande Plain region. It comprises 1226 square miles with elevations from 200 to 400 feet above sea level. In the southwest part of the county, soils are gray to black crackling clay. In some areas, limestone can be found within forty inches of the surface. Along the river, brown to red loams cover crackling clayey soils. The nearest major source of permanent water is the Rio Grande to the south. The county has a warm-temperate, subtropical steppe climate. Rainfall between 1931 and 1962 averaged about 43 centimeters annually. Most of the rain falls in the form of thunderstorms; however, occasional tropical disturbances produce heavy rains in early fall. The month of September has the highest monthly rainfall average. The driest months are November and December. Temperatures are high in the summer with daily maximums exceeding 100 degrees Fahrenheit in July and August. Winter temperatures do not usually fall below 40 degrees Fahrenheit. Freezes are not regular annual occurrences. Natural resources include caliche, clay, gravel, oil, and gas. Gas and oil production is significant. Starr County is in the South Texas Plains Vegetation region and is characterized by mid and short grasses, thorny shrubs, mesquite, cacti, live oak, and post oak. Other natural plants in the area include spiny hackberry, ebony, lime prickly ash, guayacan, Texas persimmon, lotebush, coyotillo, and cenizo. Grasses and forbs include Arizona cottontop, Texas bristlegass, lovegrass tridens, fourflowered trichloris, hooded windmill grass, pink pappusgrass, and knotroot panicum. Overgrazing; deep root plowing; and irrigation, which have resulted in a lowering of the water table, have resulted in an alteration of the natural vegetation. The natural vegetation in prehistoric and early historic times probably consisted of more grasses and less mesquite and brushy thorn because of the practice of large scale burning. In 1982, 80 percent of the land was in farms and ranches with 17 percent of the farmland under cultivation and 19 percent irrigated. Numerous species of mammals occur in Starr County today or were living there in the past. These include opossum, mole, shrew, black bear, raccoon, weasel, skunk, badger, fox, coyote, ocelot, cougar, jaguarundi, bobcat, squirrel, gopher, mouse, rat, beaver, rabbit, javelina, antelope, and deer.

There are two soil types in the 22.9 acre tract and three soil types along Midway Road. The soils within the 22.9 acre tract are Lagloria silt loam (La) and Rio Grande silt loam, 0 to 1 percent slopes (RgA). The La soils constitute the majority of the tract, while the RgA soils occupy the extreme western portion of the area and include the riverbank. These soils are described below.

Lagloria silt loam is described in the soil survey by Thompson et al. (1972) as a soil typically found in broad, irregularly shaped areas with a slope of less than one percent. These soils can be deep and well drained and found on old flood plains or terraces that no longer receive sediments from flooding. They also developed in loamy calcareous sediments. The depth to the water table is more than 80 inches, and the available water capacity is moderate.

Rio Grande silt loam is described in the soil survey by Thomson et al. (1972) as a soil found on stream terraces, with the parent material consisting of calcareous silty alluvium. It is typically found on slopes 0 to 1 percent. This is a well drained soil with a water table at more than 80 inches. Floods are described as occasional, and the available water capacity is high. The parent material is calcareous silty alluvium.

There are three soil types along Midway Road. From north to south they are McAllen fine sandy loam (Mc), Lagloria silt loam (La), and Reynosa silty clay loam (Re).

Lagloria silt loam is described in the soil survey by Thompson et al. (1972) as a soil typically found in broad, irregularly shaped areas with a slope of less than one percent. These soils can be deep and well drained and found on old flood plains or terraces that no longer receive sediments from flooding. They also developed in loamy calcareous sediments. The depth to the water table is more than 80 inches, and the available water capacity is moderate.

McAllen fine sandy loam is found on stream terraces on slopes of 0 to 3 percent. These soils are well drained. The depth to the water table is more than 80 inches, and the available water capacity is moderate. Frequency of flooding is described as none. Calcareous loamy alluvium is the parent material.

Reynosa silty clay loam is found on stream terraces on slopes of 0 to 2 percent. These soils are will drained. The depth to the water table is more than 80 inches, and the available water capacity is high. The parent material consists of calcareous loamy alluvium.

According to a geoarchaeological study of Rio Grande terrace flood plain alluvium from Amistad Dam to the Gulf of Mexico by Gustavson and Collins (1998:10), the slope of the river in the project area is 0.2 km, and sinuosity is 1.5. Resacas (segments of former river channels) are preserved on the flood plain surface below Rio Grande City. The only soil series discussed in the study by Gustavson and Collins is the Rio Grande Series and the Lagloria Series. Soils of the Rio Grande series developed on the silts and sands of natural levees, while soils of the Lagloria series are more mature and occur on older sediments.

ARCHAEOLOGICAL BACKGROUND

According to a statistical overview published by the THC (Biesaat et al. 1985:76), Starr County is located in the Southern Coastal Plains Cultural-Geographical Region of Texas. In 1985, when the overview was published, the number of archaeological sites in the region was 1516 or 7.50% of the state. In 1985, there were 228 recorded sites in the county. This accounted for 15% of the region and 1.13% of the state. Although three Paleo-Indian sites were reported, the majority of sites in the county in 1985 were listed as Archaic (n=51) and Late Prehistoric (n=12). Site disturbance is common in the area. Biesaat et al. (1985:185) mention erosion disturbance (173 sites), construction disturbance (63 sites), disturbed and artificially capped (9 sites), deflated (14 sites), dispersed (108 sites), potted and/or surface collected (10 sites), and destroyed (1 site). Sites with subsistence related features were also common with hearths present (73 sites), burned rock features (18 sites), shell middens (5 sites), pits (1 site), midden soil (1 site), and other (15 sites). Twenty-four quarry sites were known to exist. Today there are 396 recorded sites in Starr County.

According to a planning document for the Central and Southern Planning Region of Texas as defined by the Texas Historical Commission (Mercado-Allinger et al. 1996:13), Starr County is located in the Rio Grande Plains Archeological Region. This is one of the major oil producing areas in the state. It also contains significant amounts of coal-bearing formations and is on the eastern edge of Falcon Reservoir. The area is rapidly changing due to an increase in tourists and seasonal residents (Winter Texans). These factors are major contributors to site disturbance in the area.

Sites defined as Paleo-Indian in South Texas are typically limited to surface discoveries of distinctive lanceolate spear points (Hester 1980a). As stated above, Archaic and Late Prehistoric sites are common and consist of campsites with subsistence-related features and, in some cases, burials.

According to Hester (1980b:57), there are two kinds of occupation sites in South Texas, surface-exposed sites and sites buried in stream silts. He states that "Erosion, often helped along by cultivation, cattle grazing, ranch roads, and droughts, has exposed many prehistoric occupation sites." He cites Starr County as an area where erosion has been so severe that sites have been completely exposed. As a result, the artifacts of different time periods became mixed and then were covered again by recent silting and deposition. Hester believes that these sites are likely to be of little archaeological value.

The earliest account of Europeans in the vicinity of the current project area was the route taken by *Cabeza de Vaca* in the sixteenth century when he crossed what is believed by Alex D. Krieger (1961) to be the Rio Grande at the present-day site of Roma, Texas (Fox 1983). In the seventeenth and eighteenth centuries, the Spanish established colonies and missions in parts of South Texas. In 1749, for example, Spanish colonists found the land in what is now Starr County to be suitable for cattle and sheep raising. Some of the earliest settlements were *Roma-Los Saenz* (founded in 1767) and *Salineño* (formerly the headquarters of *Rancho Salinas*). Neither of these settlements are near the current project area.

Starr County has been the focus of numerous surveys by professional archaeologists. Much of the work in this area has been the direct result of oil and gas exploration and the construction of the Falcon Reservoir in Starr and Zapata counties. In the 1950s, salvage archaeology was carried out along the Rio Grande River prior to impoundment of the waters of the Falcon Reservoir (Krieger and Hughes 1950 and Hartle and Stephenson 1951). Numerous sites were recorded and several towns were relocated to higher ground.

In 1996, James E. Warren of Archaeology Consultants, Inc. supervised an intensive survey of all land above the 307-foot contour interval at Falcon Reservoir (McCulloch et al. 2003). This study examined an estimated 28,175 acres. In addition to assessing known sites, 353 previously unrecorded sites were documented. At or below the 407-foot contour an additional 636 sites are known to exist. Prehistoric sites visited and/or recorded include campsites and quarries or workshops dating to Archaic and Paleo-Indian times. Historic sites include cemeteries, farmsteads, urban house sites, ranches, ancillary ranch facilities, towns, quarries, bridges, and water control features. Structures in Warren's project area consisted of houses, outbuildings, house ruins, bridges, cemetery headstones, and ranching structures.

Two surveys by professional archaeologists have been conducted near the project area. In 1997, archaeologists from the Texas Water Development Board examined the right-of-way along United States Highway 83. This study did not include any portions of the project area, but one prehistoric site (41SR335) was found to the south of the highway, and this is the nearest recorded site to the project area. Site 41SR335 is described on the site form as an open campsite containing a very thin scatter of chipped stone exposed in the silty, sandy alluvial soils of a fallow agricultural field immediately south of United States Highway 83, about 500 meters west of the intersection of the highway and Midway Road. The site form describes it as a possible river terrace as the river channel may have been near the site in the past. Most of the area had been cleared for agriculture, residential development, and roadways. Its size was estimated at 60 meters in diameter. No comments regarding its significance or further work appear on the site form. The report documenting this survey was not available at the time of this study.

The other survey in the area was conducted by archaeologists from the Texas Water Development Board in 1999. This study examined two areas in and near the current project area. The east bank of the Rio Grande River was part of the study area, and it included the extreme western portion of the 22.9 acre tract. In addition, this survey examined a short linear segment at a right angle to Midway Road. No sites were found in either of these areas or in the remainder of the survey area. The report documenting this survey was not available at the time of this study.

Additional survey and testing by professional archaeologists have been conducted in the county. One testing project, conducted by the State Department of Highways and Public Transportation (now TxDOT) in the 1990s (Price 1992) revealed the disturbed nature of sites in the county. Site 41SR191 was recorded as a surface scatter of burned rock and lithic debitage in a fallow field occupying an area of approximately 50 meters x 150 meters. Although this site was not initially viewed as significant, it was selected as one of two sites from a sample of 25 prehistoric sites most likely to yield significant information. The work at this site consisted of eight square meters and machine excavation of two backhoe trenches, each approximately 40 meters in length and 2 meters in depth. Testing yielded only five prehistoric biface fragments, none of which was temporally or culturally diagnostic, and relatively small quantities of lithic debitage. The debitage was found at the surface and to a depth of 30 centimeters. Historic artifacts were found mixed with the prehistoric materials. It was concluded that this site had been very disturbed through historic land clearing and cultivation activities. Since site 41SR191 was one of only two sites believed to possess research potential, this study reveals the disturbed nature of many of the lithic scatters found in this part of Texas.

Additional small area surveys have been conducted in Starr County. For more information regarding other work in the area researchers are advised to consult the site files at TARL and the THC. No bibliography has been published for that part of South Texas that includes Starr County. There is a published series entitled *Abstracts in Texas Contract Archeology* (published by the THC and compiled by William E. Moore) that documents all work in Texas from 1988 through 1992. As mentioned above, there are several overviews of South Texas that provide excellent data for the area. These are *Archeology in the Central and Southern Planning Region, Texas: A Planning Document* (Mercado-Allinger et al. 1996), *Digging Into South Texas Prehistory: A Guide for Amateur Archaeologists* (Hester 1980b), *Texas Graveyards: A Cultural Legacy* (Jordan 1988); *Prehistoric Archeological Sites in Texas: A Statistical Overview* (Biesaart et al. 1985), and *Traces of Texas History: Archeological Evidence of the Past 450 Years* (Fox 1983).

METHODS OF INVESTIGATION

General

Prior to the field survey, the site records at TARL were checked for known sites in the project area and vicinity. In addition, the Texas Archeological Atlas was checked for known sites and previous surveys. Relevant reports by various contract archaeologists and state agencies were reviewed in order to determine the kinds of sites likely to be present in the area. This survey was documented through the utilization of Microsoft Word and Excel documents. Location data were collected and documented with Garmin GPS-aided computer topographic mapping programs, National Geographic Topo, and ESRI ArcMap. A Kodak digital camera was used to document the project through photography, and photographs were enhanced using Adobe Photoshop software. Shovel test data were logged onto an Excel spreadsheet that was used to create the shovel test log (Appendix I).

Area A

Area A is a 22.9 acre rectangular area between the Rio Grande River to the west and Midway Road to the east. It is in this area that the water intake structure and the water treatment plant will be constructed, and the raw water supply line will be installed. The majority of the 22.9 acre tract is flat and was covered with low grasses at the time of this survey. The western portion of this tract is bounded by the east bank of the Rio Grande River. This bank is very steep and highly eroded (Figure 3). The riverbank presented a good profile that was examined for evidence of an archaeological site. The proposed water intake structure will be constructed in the western portion of this tract (Figure 4). The water treatment plant will be constructed in the eastern portion of this tract (Figure 5), which is bounded by Midway Road to the east.

In the 22.9 acre tract, eleven shovel tests were excavated to a depth of 100 centimeters. The location of the shovel tests is depicted in Figure 6. These shovel tests were dug through silt loam with an underlying clay loam with some clay content in two tests. All fill was screened through ¼ inch hardware cloth. Shovel test information was recorded in the field, and this information appears in this report as Appendix I. Four shovel tests were dug in the vicinity of the proposed water treatment plant, two shovel tests were dug in the vicinity of the proposed 16-inch raw water supply line, one shovel test was dug in the vicinity of the proposed river intake structure, and four shovel tests were dug randomly within the 22.9 acre tract.



Figure 3. Profile of River Bank (facing south)



Figure 4. Site of Proposed Water Intake Structure (facing west)



Figure 5. Site of Proposed Water Treatment Plant (facing west)

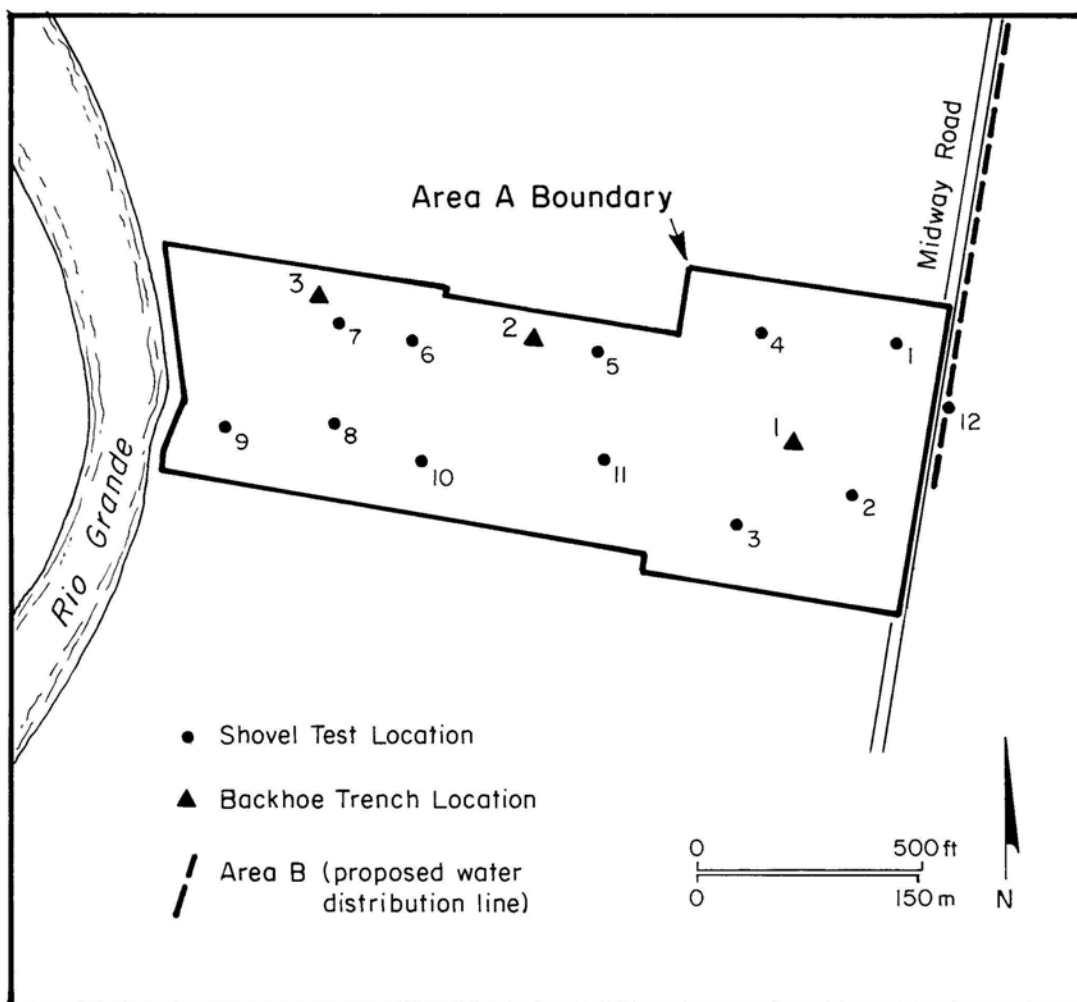


Figure 6. Location of Shovel Tests and Backhoe Trenches in Area A

In addition to the eleven shovel tests, three backhoe trenches were excavated in the 22.9 acre tract. Samples of the matrix were collected from each trench, and Munsell color values were recorded for each zone of the profiles. All trenches were backfilled after sampling. The profiles of the three trenches exhibited a homogeneous silt loam that differed only by the degree of moisture content. The ultra dry silt loam comprised the upper 60 to 70 centimeters of the profiles. The location of the backhoe trenches is depicted in Figure 6.

Backhoe Trench 1 was excavated nearest the river (Figure 6) in the vicinity of the proposed water treatment plant. The size of this trench was 10 meters long, 170 centimeters deep, and 100 centimeters wide. Three soil zones were observed within the profile of this trench. Zone 1 consisted of a light brownish-gray (10YR 6/2) silt loam that was very dry from the surface to a depth of 70 centimeters. Zone 2 consisted of a darker grayish-brown (10YR 5/1) silt loam that had higher moisture content. Zone 3 consisted of a darker brown (10YR 5/2) silt loam with a greater amount of clay content. This clay content was mainly in the southern portion of the trench from 100 centimeters below the ground surface to the bottom of the trench at 100 centimeters.

Backhoe Trench 2 was excavated in the vicinity of the proposed 16-inch raw water supply line that will connect the river intake structure and the water treatment plant (Figure 6). It was 10 meters long, 180 centimeters deep, and 100 centimeters wide. Two soil zones were observed within the profile of this trench. Zone 1 consisted of a light brownish-gray (10YR 6/2) silt loam that was very dry from the surface to a depth of 55 centimeters. Zone 2 consisted of a darker grayish-brown (10YR 5/1) silt loam that had higher moisture content.

Backhoe Trench 3 was excavated in the vicinity of the proposed river intake structure (Figure 6). It was 10 meters long, 210 centimeters deep, and 100 centimeters wide. Two soil zones were observed within the profile of this trench. Zone 1 consisted of a light brownish-gray (10YR 6/2) silt loam that was very dry from the surface to a depth of 70 centimeters. Zone 2 consisted of a darker grayish-brown (10YR 5/1) silt loam that had higher moisture content.

Area B

Area B is the route of the 16-inch water line within the right-of-way on the east side of Midway Road, and it was covered with high grass at the time of this survey. This part of the survey area varies from 500 meters to 1300 meters from the river, and no smaller watercourses or tributaries were observed in this area. The roadside ditch was deeply cut below the surface of the road and the original ground surface. The east side of the ditch had a cut bank that was measured at 75 centimeters, and a clean profile can be seen behind the grass cover.

In all, five shovel tests were dug in this area (Figure 7). Shovel tests in the ditch revealed a disturbed fill to a depth of 50 centimeters overlying a lens of silt loam to a depth of 50 centimeters. Gravels were observed in the disturbed fill. Since adjacent shovel tests in the 22.9 acre tract had no gravels, the gravels in the disturbed fill are believed to have been brought in during road construction.

There is an existing water line in the right-of-way at the top of the bank next to the property fence. The proposed water line will have to be placed in the bottom of the ditch that, in most cases, is two to three feet below the original ground surface. One and a half feet of this area is disturbed fill. Figure 8 depicts a typical view along the right-of-way of Midway Road.

Shovel tests in the ditch, the 22.9 acre tract and an examination of the eroded banks near the river did not reveal any indications of recent alluvial deposition. The silt loam in the project area is believed to be an Eocene deposit that pre-dates human occupation. Therefore, any archaeological site would have to be on or near the current surface. The five shovel tests excavated in this area varied in depth from 50 centimeters to 100 centimeters. The remainder of the right-of-way was "spot checked" with ditch profiles and shallow shovel probes to ascertain if the bottom of the ditch consisted of disturbed fill. In two areas there were recently plowed fields adjacent to the right-of-way. The surfaces of these areas were examined for evidence of an archaeological site.

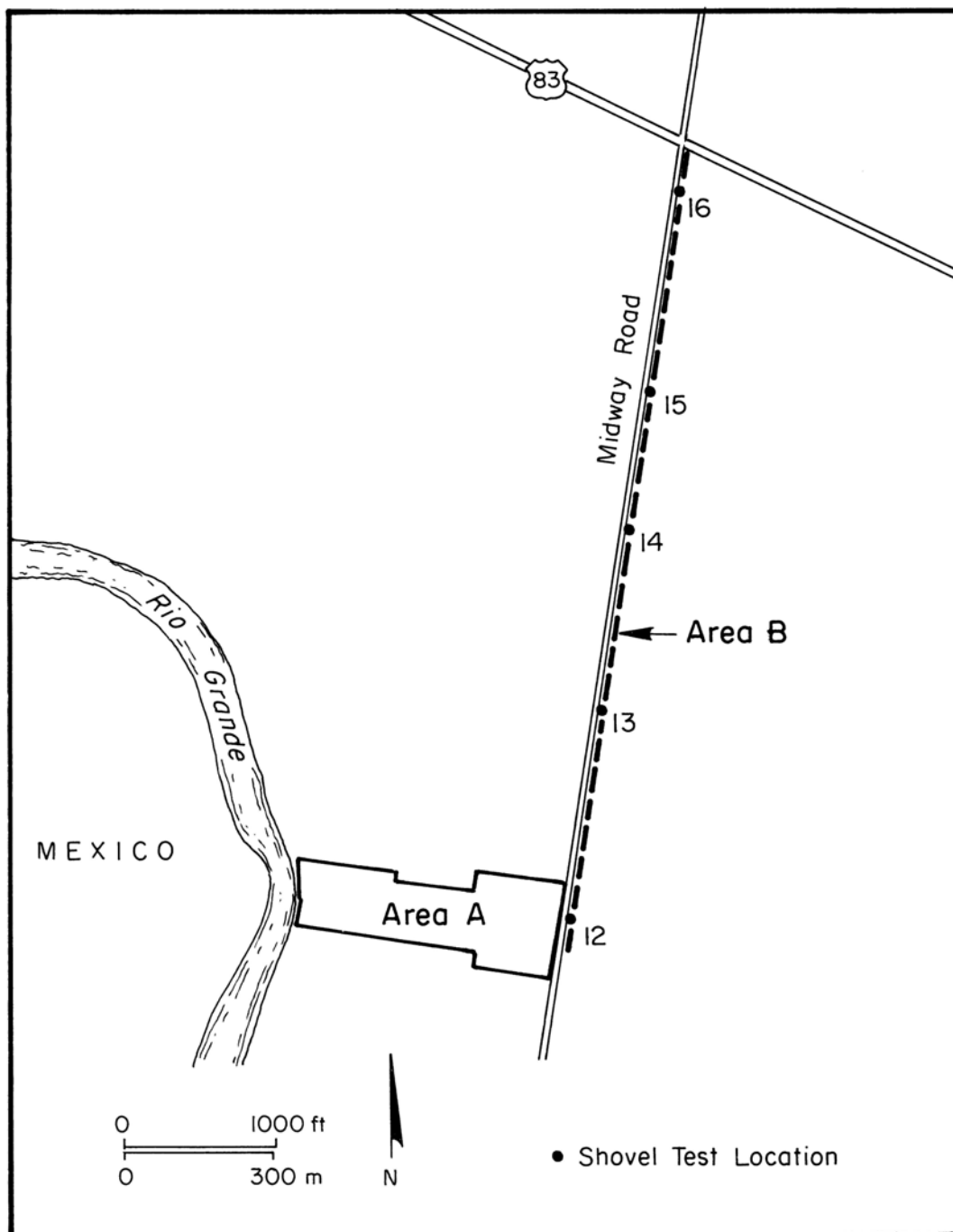


Figure 7. Location of Shovel Tests in Area B



Figure 8. Right-of-Way along Midway Road

RESULTS AND CONCLUSIONS

According to the site records at TARL and the Texas Archeological Sites Atlas, there are no previously recorded sites within any portion of the project area. The nearest historic district is Fort Ringgold in Rio Grande City. There have been previous surveys by professional archaeologists in the vicinity (see *Archaeological Background* above), but only a small portion of one of these surveys is in close proximity to the current project area. The list of properties listed in the National Register of Historic Places and a listing of historic districts was checked, and no such properties are in or near the current project area. The nearest cemeteries to the project area are the Los Garzas Cemetery 600 meters to the north of the 22.9 acre tract and at least 625 meters west of Midway Road and a single grave 290 meters west of Midway Road. Both areas are on the Roma-Los Saenz East quadrangle. The grave was visited and found to be fenced, and its location is consistent with the plotting on the topographic map. The Los Garzas Cemetery was not visited.

The project was examined through a surface inspection, examination of the riverbank, shovel tests and probes, and backhoe trenches, and no cultural materials were found within the 22.9 acre tract or in the right-of-way along Midway Road. Although the western portion of the 22.9 acre tract is adjacent to the Rio Grande River, this area is considered to be an unlikely setting for a deeply buried prehistoric site because the soils in this area are believed to date to the Eocene epoch, a time that pre-dates human occupation of the region. The area along Midway Road is considered to be an unlikely setting for a prehistoric site because of its distance from water. Although historic sites can be present anywhere on the landscape, no evidence of a historic site was observed. The majority of the 22.9 acre tract had been disturbed through agricultural practices, and the western end at the river exhibited severe erosion. The right-of-way along Midway Road had been disturbed through road construction.

RECOMMENDATIONS

No archaeological sites were found to be within the project area. Should evidence of a prehistoric or historic site be observed during the construction of the intake structure, water treatment plant, or installation of the water line; all work in the area of the find must cease until the THC can assess the situation. Should construction plans change to include new areas that will affect undisturbed ground, the THC must be notified as a return visit by a professional archaeologist may be required.

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APPENDIX I: SHOVEL TEST LOG

SHOVEL TEST NUMBER	DEPTH IN CM	SOIL TYPE	COMMENTS
1	100	silt loam	vicinity of water treatment plant
2	100	silt loam	vicinity of water treatment plant
3	100	silt loam	vicinity of water treatment plant
4	100	silt loam	vicinity of water treatment plant
5	100	silt loam	along proposed 16-inch raw water line
6	100	silt loam/clay loam	along proposed 16-inch raw water line
7	100	silt loam	near footprint of river intake structure
8	100	silt loam/clay loam	within the 22.9 acre area
9	100	silt loam	within the 22.9 acre area
10	100	silt loam	within the 22.9 acre area
11	100	silt loam	within the 22.9 acre area
12	100	disturbed fill/silt loam	along Midway road in disturbed right-of-way
13	100	disturbed fill/silt loam	along Midway road in disturbed right-of-way
14	60	disturbed fill/silt loam	along Midway road in disturbed right-of-way
15	50	disturbed fill/silt loam	along Midway road in disturbed right-of-way
16	60	disturbed fill/silt loam	along Midway road in disturbed right-of-way